

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in this application.

Listing of Claims:

Claim 1 (Currently Amended): A method for the conveyance of fine-grained solids in a fluidized bed reactor, comprising:

introducing a first gas or gas mixture from below through a gas supply tube into a mixing chamber of the reactor such that the gas flowing through the gas supply tube entrains solids from a stationary annular fluidized bed that at least partly surrounds the gas supply tube, wherein the bed height of the solids in the reactor are adjusted such that the annular fluidized bed extends beyond an upper orifice end of the gas supply tube and that solids are constantly introduced into the first gas or gas mixture and entrained by the gas stream to the mixing chamber located above the orifice region of the gas supply tube;

fluidizing the annular fluidized bed by supplying a fluidizing gas; and

conveying the solids entrained in the gas out of the reactor by adjusting the gas velocities of the first gas or gas mixture as well as of the fluidizing gas for the annular fluidized bed such that the particle Froude numbers in the gas supply tube are between 1 and 100, in the annular fluidized bed between 0.02 and 2 and in the mixing chamber between 0.3 and 30.

Claim 2 (Previously Presented): The method as claimed in claim 1, wherein the particle Froude number in the gas supply tube is between 1.15 and 20.

Claim 3 (Previously Presented): The method as claimed in claim 1, wherein the particle Froude number in the annular fluidized bed is between 0.115 and 1.15.

Claim 3 (Previously Presented): The method as claimed in claim 1, wherein the particle Froude number in the annular fluidized bed is between 0.115 and 1.15.

Claim 4 (Previously Presented): The method as claimed in Claim 1, wherein the particle Froude number in the mixing chamber is between 0.37 and 3.7.

Claim 5 (Cancelled)

Claim 6 (Previously Presented): The method as claimed in Claim 1, wherein heated solids are cooled in the reactor during the conveyance.

Claim 7 (Previously Presented): The method as claimed in claim 1, wherein the first gas or gas mixture introduced into the reactor is cooled without heating the solids in the process.

Claim 8 (Previously Presented): The method as claimed in Claim 6, wherein the gas mixture introduced via the gas supply tube and/or the fluidizing gas is air with a temperature below 100°C.

Claim 9 (Previously Presented): The method as claimed in Claim 6, wherein a cooling medium is introduced into the annular fluidized bed and/or the mixing chamber.

Claim 10 (Previously Presented): The method as claimed in Claim 1, wherein the solids are heated in the reactor.

Claim 11 (Previously Presented): The method as claimed in claim 10, wherein solids containing titanium-containing ores, iron oxide or further metal oxides are used as the solids.

Claim 12 (Previously Presented): The method as claimed in Claim 10, wherein heated gas is supplied to the reactor through the gas supply tube, into the annular fluidized bed and/or through lances or the like into the mixing chamber.

Claim 13 (Previously Presented): The method as claimed in Claim 10, wherein a fuel is supplied to the reactor through the gas supply tube, into the annular fluidized bed and/or through lances or the like into the mixing chamber, and that the pressure in the reactor is between 0.8 and 10 bar.

Claim 14 (Previously Presented): The method as claimed in Claim 10, wherein solids containing iron oxide are at least partly heated and/or calcined in at least one pre-heating stage and reduced in a downstream reduction stage, the solids being transported from the at least one pre-heating stage into the downstream reduction stage by means of the reactor serving as a flash heater.

Claim 15 (Previously Presented): The method as claimed in claim 14, wherein the exhaust gases from the reactor are passed to the at least one pre-heating stage, which has a reactor with a circulating fluidized bed and/or a venturi pre-heater.

Claim 16 (Previously Presented): The method as claimed in Claim 14, wherein a fuel is supplied to the reactor serving as a flash heater and the pre-heating stage(s) are operated substantially with the waste heat of the reactor.

Claim 17 (Previously Presented): The method as claimed in Claim 14, wherein the actual outlet temperature of the solids from the reactor is measured and that, in dependence on the measured actual outlet temperature in relation to a set point outlet temperature, the supply of cold or heated gases or gas mixtures, a cooling medium and/or fuels, is varied.

Claim 18 (Previously Presented): A plant for the conveyance of fine-grained solids, in particular for performing a method as claimed in Claim 1, comprising a reactor constituting a fluidized bed

reactor, wherein the reactor has a gas supply system which is formed such that gas flowing through the gas supply system entrains solids from a stationary annular fluidized bed, which at least partly surrounds the gas supply system, into the mixing chamber, an external separator for separating the solids downstream of the reactor, and a conveying conduit connecting the mixing chamber with the external separator.

Claim 19 (Previously Presented): The plant as claimed in claim 18, wherein the gas supply system has at least one gas supply tube extending upwards substantially vertically from the lower region of the reactor into the mixing chamber of the reactor, the gas supply tube being at least partly surrounded by an annular chamber in which the stationary annular fluidized bed is formed.

Claim 20 (Previously Presented): The plant as claimed in claim 19, wherein the gas supply tube is arranged approximately centrally with reference to the cross-sectional area of the reactor.

Claim 21 (Cancelled)

Claim 22 (Previously Presented): The plant as claimed in Claim 19, wherein provided in the annular chamber of the reactor is a gas distributor which divides the chamber into an upper fluidized bed region and a lower gas distributor chamber, and that the gas distributor chamber is connected to a supply conduit for fluidizing gas.

Claim 23 (Previously Presented): The plant as claimed in Claim 19, wherein the reactor has at least one supply conduit for fuel and/or a cooling medium leading to the gas supply tube and/or at least one such supply conduit leading to the annular chamber.

Claim 24 (Previously Presented): The plant as claimed in Claim 18, wherein the external separator is a cyclone, a hot-gas electrostatic precipitator, or a bag filter.